



20030101 DE 220007

	A	B	C	D	E	F	G
1	Effect of various factors on the recovery of sucralose in crystallization schemes						
2			1 Recrystallization		3 Recrystallizations		
3	Purge of Impurities prior to Crystallization		None	50%	None	50%	75%
4			Sucralose Recovery				
5		1st Crystallizer	35%	43%	35%	43%	50%
6		1st Recrystallizer	37%	45%	38%	46%	52%
7		2nd Recrystallizer			52%	57%	59%
8		3rd Recrystallizer			58%	59%	60%
9			Sucralose Flow				
10							
11	Total feed to system		100	100	100	100	100
12	1st Crystallizer						
13		Total Feed	128	131	140	146	150
14		Crystals Produced	45	57	49	63	75
15		Mother Liquor	83	74	91	83	75
16	1st Recrystallizer						
17		Total Feed	45	57	64	86	105
18		Crystals Produced	17	26	24	40	55
19		Mother Liquor	28	31	40	46	50
20	2nd Recrystallizer						
21		Total Feed			31	51	71
22		Crystals Produced			16	29	42
23		Mother Liquor			15	22	30
24	3rd Recrystallizer						
25		Total Feed			16	29	42
26		Crystals Produced			9	17	25
27		Mother Liquor			7	12	17
28	Overall recovery of sucralose		17%	26%	9%	17%	25%
29				155%		186%	
30			Impurity Flow				
31	Total feed to system		100	50	100	50	25
32	1st Crystallizer						
33		Total Feed	110	55	111	56	28
34		Impurities in Crystals	11	5	11	6	3
35		Mother Liquor	99	49	100	50	25
36	1st Recrystallizer						
37		Total Feed	11	5	12	6	3
38		Impurities in Crystals	1	1	1	1	0
39		Mother Liquor	10	5	11	6	3
40	2nd Recrystallizer						
41		Total Feed			1	1	0
42		Impurities in Crystals			0	0	0
43		Mother Liquor			1	1	0
44	3rd Recrystallizer						
45		Total Feed			0	0	0
46		Impurities in Crystals			0	0	0
47		Mother Liquor			0	0	0
48	Overall Impurity Removal		98.90%	98.90%	99.99%	99.99%	99.99%
49			Impurity Level in each Crystallizer				
50		Feed	50.00%	33.33%	50.00%	33.33%	20.00%
51		1st Crystallizer	46.13%	29.53%	44.32%	27.56%	15.62%
52		1st Recrystallizer	19.66%	8.82%	16.22%	6.72%	2.86%
53		2nd Recrystallizer			4.21%	1.30%	0.47%
54		3rd Recrystallizer			0.84%	0.23%	0.08%
55		Base Yield					

Figure 1



	A	B	C	D	E	F
1	Effect of various factors on the recovery of sucralose in crystallization					
2	schemes w/ Recrystallization of 1st Crystallizer Mother Liquor					
3	Impurity Purge Prior to Crystallization			None	50%	75%
4						
5	1st Crystallizer			Sucralose Recovery		
6	1st Recrystallizer			40%	49%	54%
7	2nd Recrystallizer			54%	58%	59%
8	3rd Recrystallizer			59%	60%	60%
9	1st m/l Recrystallization			60%	60%	60%
10				35%	43%	49%
11	Total feed to system			Sucralose Flow		
12	1st Crystallizer			100	100	100
13	Total Feed			189	207	221
14	Crystals Produced			76	100	119
15	Mother Liquor			113	106	102
16	1st Recrystallizer					
17	Total Feed			113	106	102
18	Crystals Produced			40	46	50
19	Mother Liquor			73	61	52
20	2nd Recrystallizer					
21	Total Feed			107	144	173
22	Crystals Produced			58	83	102
23	Mother Liquor			49	61	71
24	3rd Recrystallizer					
25	Total Feed			76	110	134
26	Crystals Produced			45	65	80
27	Mother Liquor			31	44	54
28	1st M/L Recrystallizer					
29	Total Feed			45	65	80
30	Crystals Produced			27	39	48
31	Mother Liquor			18	26	32
32	Overall recovery of sucralose			27%	39%	48%
33						
34	Total feed to system			Impurity Flow		
35	1st Crystallizer			100	50	25
36	Total Feed			123	62	31
37	Crystals Produced			12	6	3
38	Mother Liquor			111	56	28
39	1st Recrystallizer					
40	Total Feed			111	56	28
41	Crystals Produced			11	6	3
42	Mother Liquor			100	50	25
43	2nd Recrystallizer					
44	Total Feed					
45	Crystals Produced			14	7	3
46	Mother Liquor			1	1	0
47	3rd Recrystallizer			12	6	3
48	Total Feed					
49	Crystals Produced			2	1	0
50	Mother Liquor			0	0	0
51	1st M/L Recrystallizer			1	1	0
52	Total Feed					
53	Crystals Produced			0	0	0
54	Mother Liquor			0	0	0
55	m/l			0	0	0
56						
57	Feed			Impurity Level in each Crystallizer		
58	1st Crystallizer			50.00%	33.33%	20.00%
59	1st M/L Recrystallizer			39.56%	23.00%	12.24%
60	1st Recrystallizer			49.64%	34.30%	21.39%
61	2nd Recrystallizer			11.34%	4.53%	1.94%
62	3rd Recrystallizer			1.94%	0.68%	0.28%
				0.33%	0.12%	0.05%

Figure 2

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	A	B	C	D	E	F	G	H	I	J	K
1	Effect of required purity on yield and the improvements seen with impurity pre-purge										
2				one recrystallization		three		five recrystallizations		five recrystallizations	
3				recrystallizations		recrystallizations		recrystallizations		and re-crop	
4	Sucralose Recovery										
5	Purge of Impurities prior to Crystallization		None	50%	None	50%	None	50%	None	50%	
6	1st Crystallizer		36%	44%	36%	45%	37%	45%	38%	47%	
7	1st Recrystallizer		43%	51%	45%	53%	45%	53%	47%	55%	
8	2nd Recrystallizer				52%	57%	53%	58%	55%	58%	
9	3rd Recrystallizer				57%	59%	58%	59%	58%	59%	
10	4th Recrystallizer						60%	60%	59%	60%	
11	5th Recrystallizer						60%	60%	60%	60%	
12	1st Re-Crop								35%	43%	
13	Purity		80.08%	92.36%	97.59%	99.31%	99.83%	99.95%	99.87%	99.96%	
14	Overall Yield		19%	29%	12%	21%	10%	19%	18%	32%	
15	Yield Improvement w/ purge			150%		178%		184%		180%	
16			one recrystallization		three		five recrystallizations		five recrystallizations		
17	Purge of Impurities prior to Crystallization		None	50%	None	50%	None	50%	None	50%	
18	Sucralose Flow										
19	Total feed to system		100	100	100	100	100	100	100	100	
20	1st Crystallizer										
21	Total Feed		126	127	138	143	141	147	208	224	
22	Crystals Produced		45	56	50	64	51	66	79	106	
23	Mother Liquor		81	71	88	79	90	81	127	119	
24	1st Recrystallizer										
25	Total Feed		45	56	69	91	75	101	117	162	
26	Crystals Produced		19	29	31	48	34	54	55	88	
27	Mother Liquor		26	27	38	43	41	47	61	73	
28	2nd Recrystallizer										
29	Total Feed				40	63	50	82	83	135	
30	Crystals Produced				21	36	27	47	45	79	
31	Mother Liquor				19	27	23	35	38	56	
32	3rd Recrystallizer										
33	Total Feed				21	36	39	69	66	115	
34	Crystals Produced				12	21	22	41	38	68	
35	Mother Liquor				9	15	16	28	28	46	
36	4th Recrystallizer										
37	Total Feed						29	54	50	90	
38	Crystals Produced						17	32	30	54	
39	Mother Liquor						12	21	21	36	
40	5th Recrystallizer										
41	Total Feed						17	32	30	54	
42	Crystals Produced						10	19	18	32	
43	Mother Liquor						7	13	12	21	
44	1st Re-crop Recrystallizer										
45	Total Feed								127	119	
46	Crystals Produced								45	51	
47	Mother Liquor								82	68	
48	Overall recovery of sucralose		19%	29%	12%	21%	10%	19%	18%	32%	
49				150%		178%		184%		180%	

Figure 3a

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	A	B	C	D	E	F	G	H	I	J	K
49				one recrystallization		three recrystallizations		five recrystallizations		five recrystallizations and re-crop	
50	Purge of Impurities prior to Crystallization			None	50%	None	50%	None	50%	None	50%
51				Impurity Flow							
52	Total feed to system			100	50	100	50	100	50	100	50
53	1st Crystallizer										
54	Total Feed			119	60	125	62	125	62	156	78
55	Impurities in Crystals			24	12	25	12	25	12	31	16
56	Mother Liquor			95	48	100	50	100	50	125	62
57	1st Recrystallizer										
58	Total Feed			24	12	31	15	31	16	39	20
59	Impurities in Crystals			5	2	6	3	6	3	8	4
60	Mother Liquor			19	10	25	12	25	12	31	16
61	2nd Recrystallizer										
62	Total Feed					7	4	8	4	10	5
63	Impurities in Crystals					1	1	2	1	2	1
64	Mother Liquor					6	3	6	3	8	4
65	3rd Recrystallizer										
66	Total Feed					1	1	2	1	2	1
67	Impurities in Crystals					0	0	0	0	0	0
68	Mother Liquor					1	1	2	1	2	1
69	4th Recrystallizer										
70	Total Feed							0	0	1	0
71	Impurities in Crystals							0	0	0	0
72	Mother Liquor							0	0	0	0
73	5th Recrystallizer										
74	Total Feed							0	0	0	0
75	Impurities in Crystals							0	0	0	0
76	Mother Liquor							0	0	0	0
77	1st recrop										
78	Total Feed									125	62
79	Impurities in Crystals									25	12
80	Mother Liquor									100	50
81	Overall Impurity Removal			95.238%	95.238%	99.707%	99.707%	99.982%	99.982%	99.977%	99.977%
82				one recrystallization		three recrystallizations		five recrystallizations		five recrystallizations and re-crop	
83	Purge of Impurities prior to Crystallization			None	50%	None	50%	None	50%	None	50%
84				Impurity Level in each Crystallizer							
85	Feed			50.00%	33.33%	50.00%	33.33%	50.00%	33.33%	50.00%	33.33%
86	1st Crystallizer			48.64%	31.85%	47.38%	30.36%	46.99%	29.81%	43.15%	25.84%
87	1st Recrystallizer			34.67%	17.50%	30.75%	14.49%	29.40%	13.40%	25.07%	10.76%
88	2nd Recrystallizer					15.49%	5.53%	13.39%	4.55%	10.50%	3.48%
89	3rd Recrystallizer					6.56%	2.01%	4.75%	1.38%	3.52%	1.04%
90	4th Recrystallizer							0.52%	0.14%	1.51%	0.43%
91	5th Recrystallizer							0.17%	0.05%	0.75%	0.21%
92	recrop feed									49.65%	34.51%
93	Base Yield			60%							
94	Effect Factor			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
95	1st Crystallizer			36%	44%	36%	45%	37%	45%	38%	47%
96	1st Recrystallizer			43%	51%	45%	53%	45%	53%	47%	55%
97	2nd Recrystallizer					52%	57%	53%	58%	55%	58%
98	3rd Recrystallizer					57%	59%	58%	59%	58%	59%
99	4th Recrystallizer							60%	60%	59%	60%
100	5th Recrystallizer							60%	60%	60%	60%
101	recrop feed									35%	43%

Figure 3b

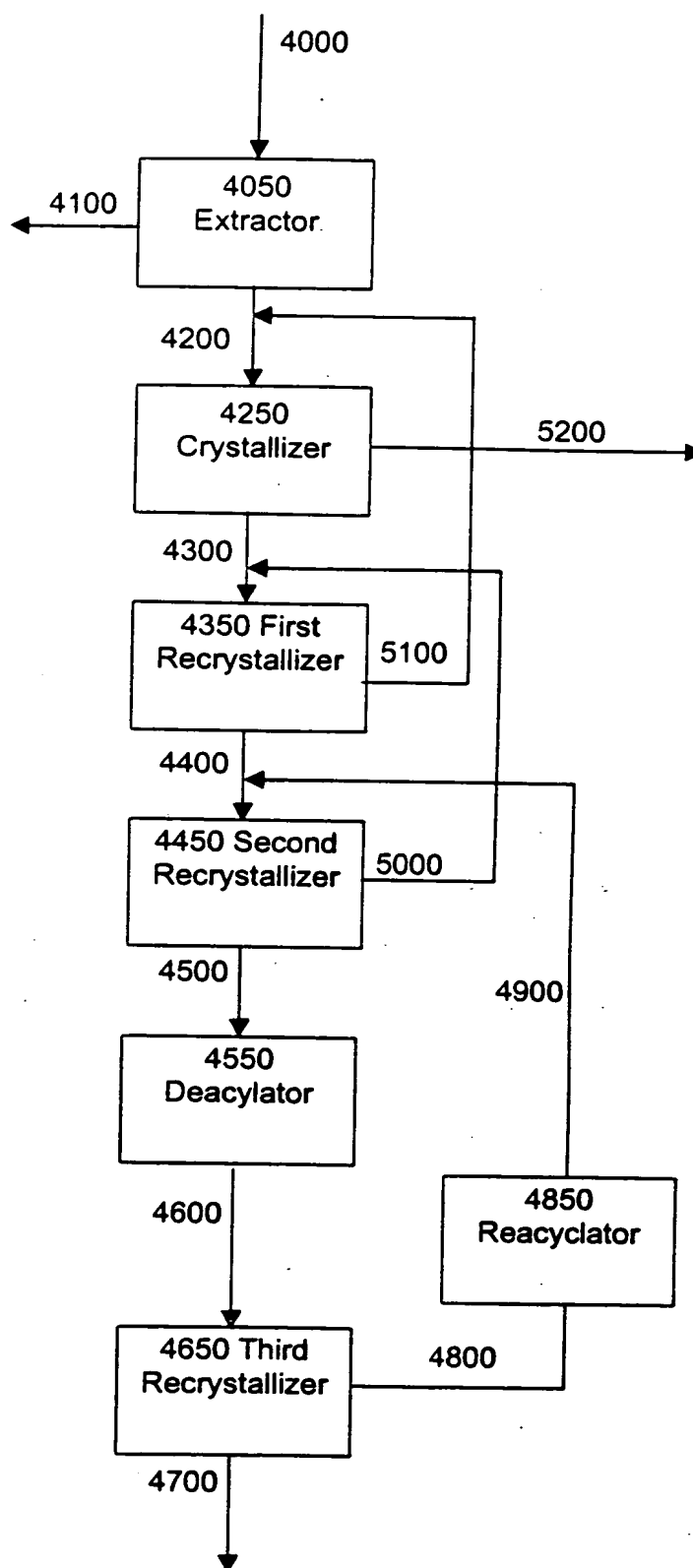


Figure 8

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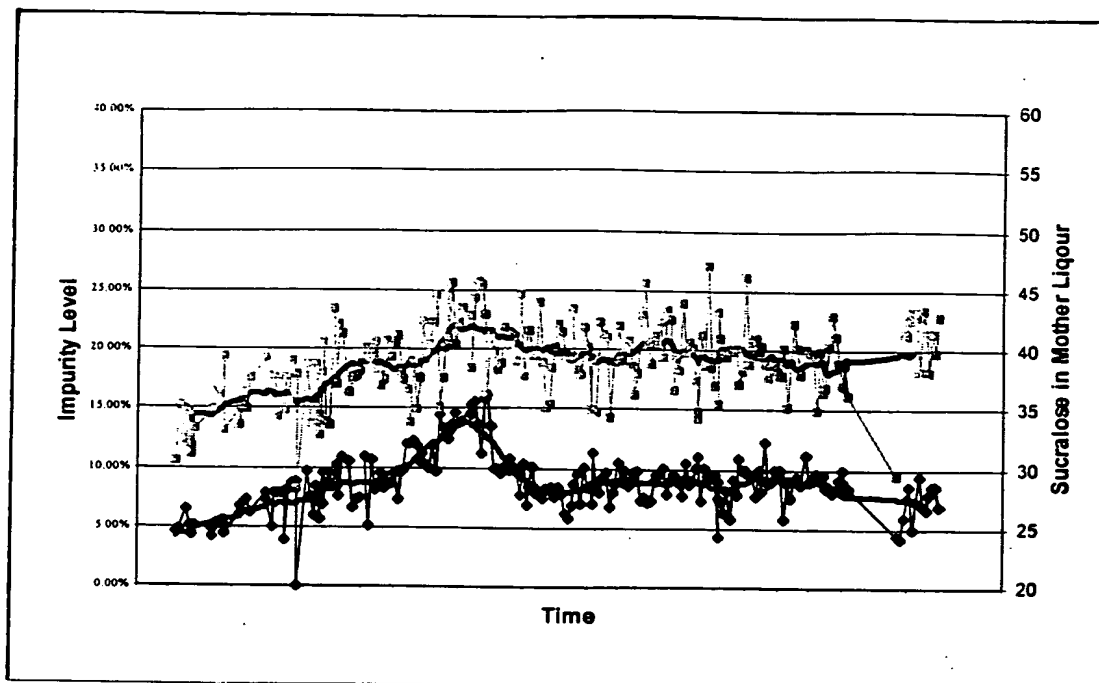


Figure 10a

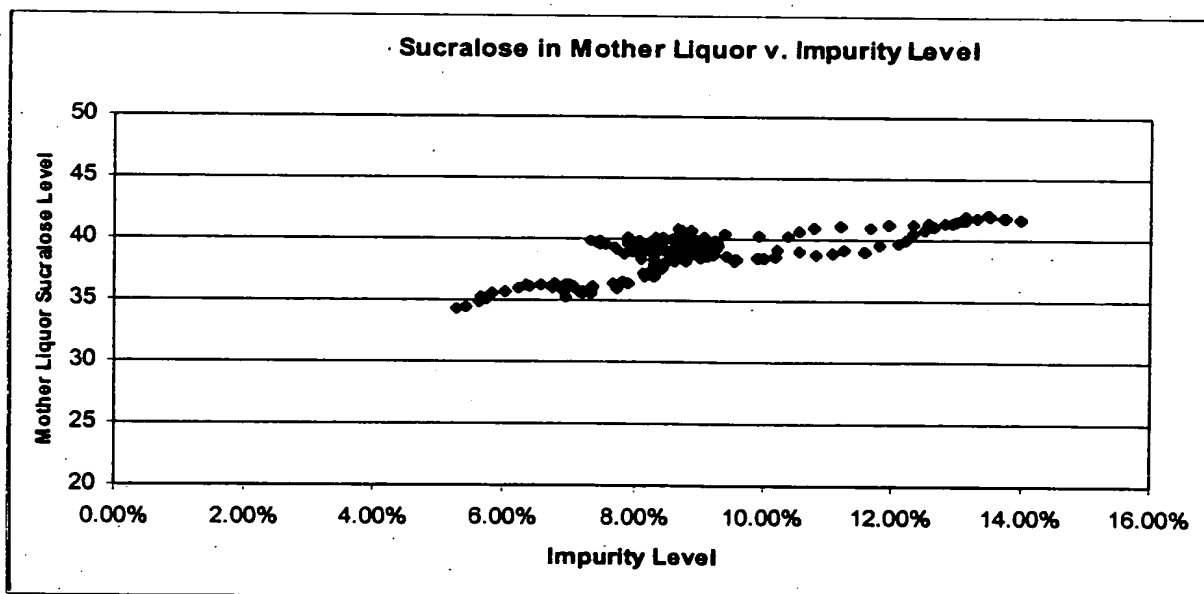


Figure 10b

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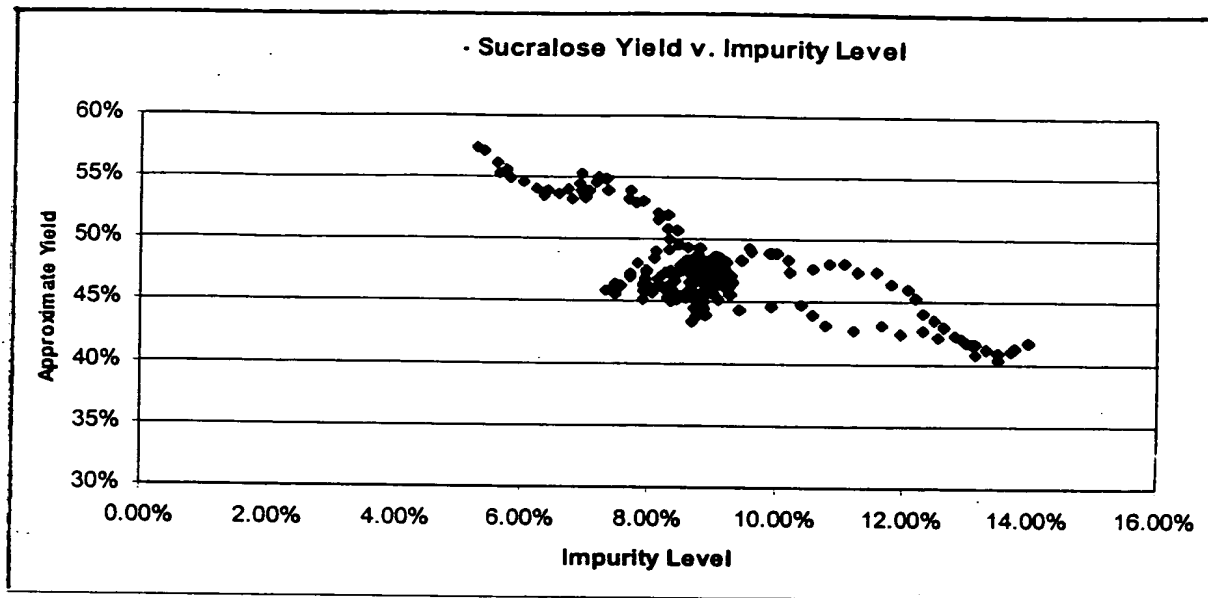


Figure 10c